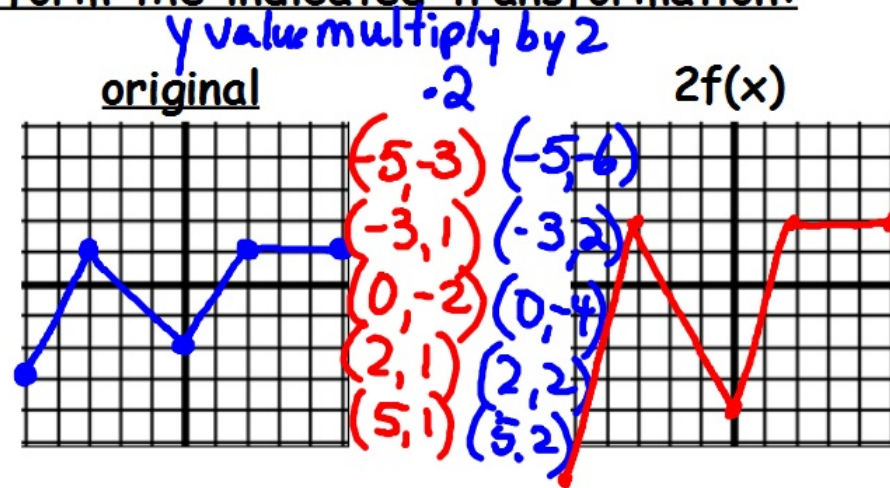


Bellwork: 10/19/12

Perform the indicated transformation:



$$y = a f(x-h) + k$$

↓  
+k → up  
increase the y value  
-k → down  
decrease the y value

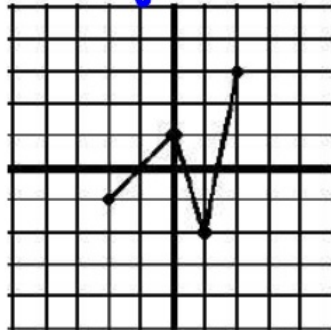
↙  
 $x-h \rightarrow h \oplus$   
right  
increase x value

$x+h \rightarrow h \ominus$   
left  
decrease x value

## Transformations (h and k only)

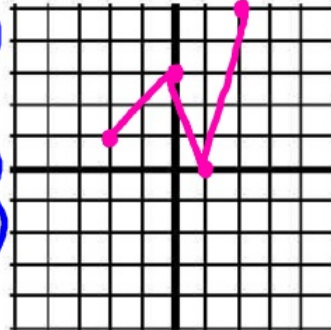
Using the given the graph, perform the following transformations.

original



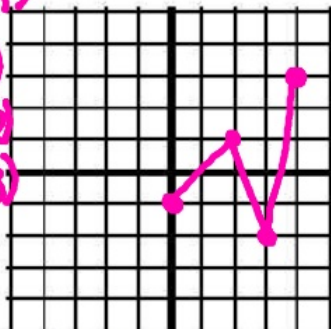
$$\begin{aligned}
 & y+2 \\
 & (-2, -1) \rightarrow (-2, 1) \\
 & (0, 1) \rightarrow (0, 3) \\
 & (1, -2) \rightarrow (1, 0) \\
 & (2, 3) \rightarrow (2, 5)
 \end{aligned}$$

1)  $f(x) + 2$

 $k=2$   
up 2 $h=2$  right 2

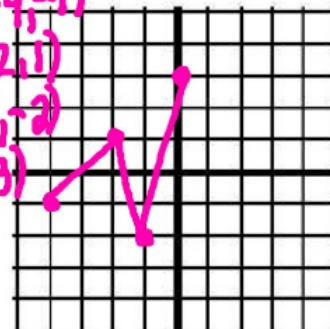
2)  $f(x-2)$

$$\begin{aligned}
 & x+2 \\
 & (-2, -1) \rightarrow (0, -1) \\
 & (0, 1) \rightarrow (2, 1) \\
 & (1, -2) \rightarrow (3, -2) \\
 & (2, 3) \rightarrow (4, 3)
 \end{aligned}$$

 $h=-2$  left 2

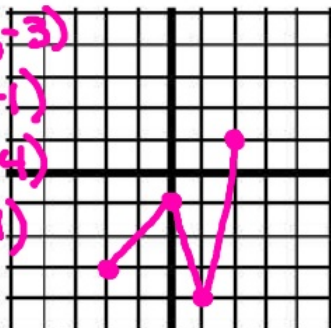
3)  $f(x+2)$

$$\begin{aligned}
 & x-2 \\
 & (-2, -1) \rightarrow (-4, -1) \\
 & (0, 1) \rightarrow (-2, 1) \\
 & (1, -2) \rightarrow (-1, -2) \\
 & (2, 3) \rightarrow (0, 3)
 \end{aligned}$$

 $k=-2$  down 2

4)  $f(x) - 2$

$$\begin{aligned}
 & y-2 \\
 & (-2, -1) \rightarrow (-2, -3) \\
 & (0, 1) \rightarrow (0, -1) \\
 & (1, -2) \rightarrow (1, -4) \\
 & (2, 3) \rightarrow (2, 1)
 \end{aligned}$$

 $h=1$  right 1

5)  $f(x-1) + 3$

$$\begin{aligned}
 & x+1 \quad y+3 \\
 & (-2, -1) \rightarrow (-1, 2) \\
 & (0, 1) \rightarrow (1, 4) \\
 & (1, -2) \rightarrow (2, 1) \\
 & (2, 3) \rightarrow (3, 6)
 \end{aligned}$$

 $k=3$  up 3